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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/902,856	07/10/2001	A. David Johnson	A-70170	1678

7590

10/03/2002

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EXAMINER

WESSMAN, ANDREW E

ART UNIT

PAPER NUMBER

1742

DATE MAILED: 10/03/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

AS-4

Office Action Summary	Application No.	Applicant(s)	
	09/902,856	JOHNSON ET AL.	
	Examiner	Art Unit	
	Andrew E Wessman	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

1. Claims 1-9 have been submitted for examination.

Claim Objections

2. Applicant is advised that should claim 5 be found allowable, claim 7 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Johnson et al. (U.S. Patent No. 5,903,099).

Johnson et al. anticipates the invention. Johnson et al. discloses (col. 5, line 43 to col. 6, line 35) a process for creating shape memory alloy thin film actuators. This method comprises (col. 5, lines 47-49) depositing a sacrificial layer onto the substrate, followed by (col. 6, lines 14-16) sputtering of the nickel-titanium shape memory alloy onto the sputtering layer. Johnson et al. discloses (col. 4, lines 56-62) that the shape memory alloy is deposited in an amorphous form. Johnson et al. next discloses (col. 6,

lines 20-35) etching the sacrificial layer away and heat treating the now free standing shape memory alloy thin film. Johnson et al. also discloses (col. 5, lines 1-5) that such a process includes a cooling down temperature after the processing is completed.

In regards to the features of claim 2, Johnson et al. discloses (col. 6, lines 20-22) that etching is performed to release the shape memory actuators from the sacrificial layer. Such a process would inherently involve using an etchant which does not damage the amorphous shape memory alloy, as to do otherwise would render the invention inoperable by etching away all of the previously sputtered material.

In regards to the features of claim 3, Johnson et al. discloses (col. 5, lines 47-48) that the sacrificial layer may comprise aluminum.

In regards to the features of claim 4, Johnson et al. discloses (col. 3, lines 55-56) that the actuator may be 2 microns thick, which is within the range of 1-40 microns thick present in applicant's claimed invention.

In regards to the features of claims 5 and 6, Johnson et al. discloses (col. 6, lines 15-22) that the shape memory alloy may be heat treated before the etching of the sacrificial layer is performed, wherein the thin film would remain deposited on the sacrificial layer.

~~In regards to the features of claim 7, Johnson et al. discloses (col. 4, lines 65-67)~~
cooling down the free standing thin film after heat treatment.

In regards to the features of claims 8 and 9, Johnson et al. discloses a method in which a product is produced.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gabriel et al. (U.S. Patent No. 4,864,824) teaches a method for producing shape memory alloy actuators including sputtering and etching a sacrificial layer.

Lee et al. (U.S. Patent No. 5,819,749), Busch et al. (U.S. Patent No. 5,061,914), and Fitch et al. (U.S. Patent No. 5,722,989) all teach method of making shape memory alloy products.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew E Wessman whose telephone number is (703)305-3163. The examiner can normally be reached on Monday through Friday, 8:00am to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (703)308-1146. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9310 for regular communications and (703)872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

AEW
September 27, 2002

ROY KING 
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

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